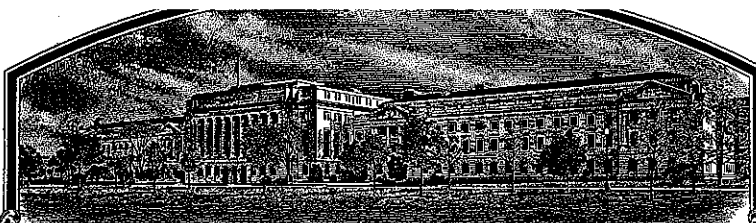


No.

200800074



THE UNITED STATES OF AMERICA

TO ALL TO WHOM THESE PRESENTS SHALL COME:

West Bred LLC

Whereas, THERE HAS BEEN PRESENTED TO THE

Secretary of Agriculture

AN APPLICATION REQUESTING A CERTIFICATE OF PROTECTION FOR AN ALLEGED DISTINCT VARIETY OF SEXUALLY REPRODUCED, OR TUBER PROPAGATED PLANT, THE NAME AND DESCRIPTION OF WHICH ARE CONTAINED IN THE APPLICATION AND EXHIBITS, A COPY OF WHICH IS HEREUNTO ANNEXED AND MADE A PART HEREOF, AND THE VARIOUS REQUIREMENTS OF LAW IN SUCH CASES MADE AND PROVIDED HAVE BEEN COMPLIED WITH, AND THE TITLE THERETO IS, FROM THE RECORDS OF THE PLANT VARIETY PROTECTION OFFICE, IN THE APPLICANT(S) INDICATED IN THE SAID COPY, AND WHEREAS, UPON DUE EXAMINATION MADE, THE SAID APPLICANT(S) IS (ARE) ADJUDGED TO BE ENTITLED TO A CERTIFICATE OF PLANT VARIETY PROTECTION UNDER THE LAW.

NOW, THEREFORE, THIS CERTIFICATE OF PLANT VARIETY PROTECTION IS TO GRANT UNTO THE SAID APPLICANT(S) AND THE SUCCESSORS, HEIRS OR ASSIGNS OF THE SAID APPLICANT(S) FOR THE TERM OF TWENTY YEARS FROM THE DATE OF THIS GRANT, SUBJECT TO THE PAYMENT OF THE REQUIRED FEES AND PERIODIC REPLENISHMENT OF VIABLE BASIC SEED OF THE VARIETY IN A PUBLIC REPOSITORY AS PROVIDED BY LAW, THE RIGHT TO EXCLUDE OTHERS FROM SELLING THE VARIETY, OR OFFERING IT FOR SALE, OR REPRODUCING IT, OR IMPORTING IT, OR EXPORTING IT, OR CONDITIONING IT FOR PROPAGATION, OR STOCKING IT FOR ANY OF THE FOREGOING PURPOSES, OR USING IT IN PRODUCING A HYBRID OR DIFFERENT VARIETY THEREFROM, TO THE EXTENT PROVIDED BY THE PLANT VARIETY PROTECTION ACT. (84 STAT. 1542, AS AMENDED, 7 U.S.C. 2321 ET SEQ.)

WHEAT, COMMON

'Samson'

In Testimony Whereof, I have hereunto set my hand and caused the seal of the Plant Variety Protection Office to be affixed at the City of Washington, D.C. this seventh day of April, in the year two thousand and eight.

Attest:

Commissioner
Plant Variety Protection Office
Agricultural Marketing Service

Secretary of Agriculture

U.S. DEPARTMENT OF AGRICULTURE
AGRICULTURAL MARKETING SERVICE
SCIENCE AND TECHNOLOGY - PLANT VARIETY PROTECTION OFFICE

APPLICATION FOR PLANT VARIETY PROTECTION CERTIFICATE
(Instructions and information collection burden statement on reverse)

The following statements are made in accordance with the Privacy Act of 1974 (5 U.S.C. 552a) and the Paperwork Reduction Act (PRA) of 1995.

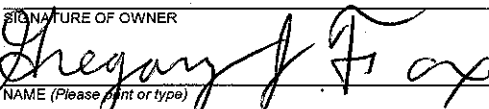
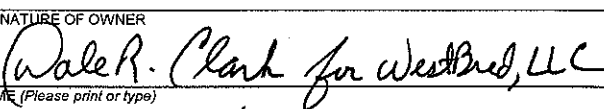
Application is required in order to determine if a plant variety protection certificate is to be issued (7 U.S.C. 2421). Information is held confidential until certificate is issued (7 U.S.C. 2426).

| | | | |
|--|--|---|---|
| 1. NAME OF OWNER WestBred LLC | | 2. TEMPORARY DESIGNATION OR EXPERIMENTAL NAME CA905-752 | 3. VARIETY NAME Samson |
| 4. ADDRESS (Street and No., or R.F.D. No., City, State, and ZIP Code, and Country) 81 Timberline Dr. Bozeman, MT 59718-8184 | | 5. TELEPHONE (include area code) 406-587-1218 | FOR OFFICIAL USE ONLY PVPO NUMBER #200800074 FILING DATE January 16, 2008 |
| 7. IF THE OWNER NAMED IS NOT A "PERSON", GIVE FORM OF ORGANIZATION (corporation, partnership, association, etc.) Limited Liability Corporation | | 6. FAX (include area code) 406-586-8247 | |
| 8. IF INCORPORATED, GIVE STATE OF INCORPORATION Arizona | 9. DATE OF INCORPORATION August 4, 2003 | | |
| 10. NAME AND ADDRESS OF OWNER REPRESENTATIVE(S) TO SERVE IN THIS APPLICATION. (First person listed will receive all papers) Dr. Greg Fox, WestBred, LLC 717 14th Street South Fargo, ND 58103 | | | FILING AND EXAMINATION FEES: \$ 4382.00 DATE 1-16-08 CERTIFICATION FEE: \$ 768.00 DATE 2/12/08 |
| 11. TELEPHONE (Include area code) 701-293-5146 | 12. FAX (Include area code) | 13. E-MAIL gfox@westbred.com | |
| 14. CROP KIND (Common Name) Hard Red Spring Wheat | 16. FAMILY NAME (Botanical) Gramineae | 18. DOES THE VARIETY CONTAIN ANY TRANSGENES? (OPTIONAL) <input type="checkbox"/> YES <input checked="" type="checkbox"/> NO IF SO, PLEASE GIVE THE ASSIGNED USDA-APHIS REFERENCE NUMBER FOR THE APPROVED PETITION TO DEREGULATE THE GENETICALLY MODIFIED PLANT FOR COMMERCIALIZATION. | |
| 15. GENUS AND SPECIES NAME OF CROP Triticum aestivum | 17. IS THE VARIETY A FIRST GENERATION HYBRID? <input type="checkbox"/> YES <input checked="" type="checkbox"/> NO | 20. DOES THE OWNER SPECIFY THAT SEED OF THIS VARIETY BE SOLD AS A CLASS OF CERTIFIED SEED? (See Section 83(a) of the Plant Variety Protection Act) <input type="checkbox"/> YES (If "yes", answer items 21 and 22 below) <input checked="" type="checkbox"/> NO (If "no", go to item 23) | |
| 19. CHECK APPROPRIATE BOX FOR EACH ATTACHMENT SUBMITTED (Follow instructions on reverse) | | 21. DOES THE OWNER SPECIFY THAT SEED OF THIS VARIETY BE LIMITED AS TO NUMBER OF CLASSES? <input type="checkbox"/> YES <input checked="" type="checkbox"/> NO IF YES, WHICH CLASSES? <input type="checkbox"/> FOUNDATION <input type="checkbox"/> REGISTERED <input type="checkbox"/> CERTIFIED | |
| a. <input checked="" type="checkbox"/> Exhibit A. Origin and Breeding History of the Variety b. <input checked="" type="checkbox"/> Exhibit B. Statement of Distinctness c. <input checked="" type="checkbox"/> Exhibit C. Objective Description of Variety d. <input type="checkbox"/> Exhibit D. Additional Description of the Variety (Optional) e. <input checked="" type="checkbox"/> Exhibit E. Statement of the Basis of the Owner's Ownership f. <input checked="" type="checkbox"/> Exhibit F. Declaration Regarding Deposit g. <input checked="" type="checkbox"/> Voucher Sample (3,000 viable untreated seeds or, for tuber propagated varieties, verification that tissue culture will be deposited and maintained in an approved public repository) g. <input checked="" type="checkbox"/> Filing and Examination Fee (\$4,382), made payable to "Treasurer of the United States" (Mail to the Plant Variety Protection Office) | | 22. DOES THE OWNER SPECIFY THAT SEED OF THIS VARIETY BE LIMITED AS TO NUMBER OF GENERATIONS? <input type="checkbox"/> YES <input checked="" type="checkbox"/> NO IF YES, SPECIFY THE NUMBER 1,2,3, etc. FOR EACH CLASS. <input type="checkbox"/> FOUNDATION <input type="checkbox"/> REGISTERED <input type="checkbox"/> CERTIFIED (If additional explanation is necessary, please use the space indicated on the reverse.) | |
| 23. HAS THE VARIETY (INCLUDING ANY HARVESTED MATERIAL) OR A HYBRID PRODUCED FROM THIS VARIETY BEEN SOLD, DISPOSED OF, TRANSFERRED, OR USED IN THE U. S. OR OTHER COUNTRIES? <input type="checkbox"/> YES <input checked="" type="checkbox"/> NO IF YES, YOU MUST PROVIDE THE DATE OF FIRST SALE, DISPOSITION, TRANSFER, OR USE FOR EACH COUNTRY AND THE CIRCUMSTANCES. (Please use space indicated on reverse.) | | 24. IS THE VARIETY OR ANY COMPONENT OF THE VARIETY PROTECTED BY INTELLECTUAL PROPERTY RIGHT (PLANT BREEDER'S RIGHT OR PATENT)? <input type="checkbox"/> YES <input checked="" type="checkbox"/> NO IF YES, PLEASE GIVE COUNTRY, DATE OF FILING OR ISSUANCE AND ASSIGNED REFERENCE NUMBER. (Please use space indicated on reverse.) | |

25. The owners declare that a viable sample of basic seed of the variety has been furnished with application and will be replenished upon request in accordance with such regulations as may be applicable, or for a tuber propagated variety a tissue culture will be deposited in a public repository and maintained for the duration of the certificate.

The undersigned owner(s) is(are) the owner of this sexually reproduced or tuber propagated plant variety, and believe(s) that the variety is new, distinct, uniform, and stable as required in Section 42, and is entitled to protection under the provisions of Section 42 of the Plant Variety Protection Act.

Owner(s) is (are) informed that false representation herein can jeopardize protection and result in penalties.

| | | | |
|--|-----------------------------|--|----------------------------|
| SIGNATURE OF OWNER  | | SIGNATURE OF OWNER  | |
| NAME (Please print or type) Gregory J. Fox | | NAME (Please print or type) Dale R. Clark | |
| CAPACITY OR TITLE Special Projects Breeder | DATE May 30, 2007 | CAPACITY OR TITLE Director of Research | DATE Jan 9, 2008 |

(See reverse for instructions and information collection burden statement)

GENERAL INSTRUCTIONS: To be effectively filed with the Plant Variety Protection Office (PVPO), ALL of the following items must be received in the PVPO: (1) Completed application form signed by the owner; (2) completed exhibits A, B, C, E, F; (3) for a tuber reproduced variety, verification that a viable (in the sense that it will reproduce an entire plant) tissue culture will be deposited and maintained in an approved public repository; and (4) payment by credit card or check drawn on a U.S. bank for \$4,382 (\$518 filing fee and \$3,864 examination fee), payable to "Treasurer of the United States" (See Section 97.6 of the Regulations and Rules of Practice). **NEW:** With the application for a seed reproduced variety or by direct deposit soon after filing, the applicant must provide at least 3,000 viable untreated seeds of the variety per se, and for a hybrid variety at least 3,000 untreated seeds of each line necessary to reproduce the variety. Partial applications will be held in the PVPO for not more than 90 days; then returned to the applicant as un-filed. Mail application and other requirements to Plant Variety Protection Office, AMS, USDA, Room 401, NAL Building, 10301 Baltimore Avenue, Beltsville, MD 20705-2351. Retain one copy for your files. All items on the face of the application are self explanatory unless noted below. Corrections on the application form and exhibits must be initialed and dated. **DO NOT** use masking materials to make corrections. If a certificate is allowed, you will be requested to send a payment by credit card or check payable to "Treasurer of the United States" in the amount of \$768 for issuance of the certificate. Certificates will be issued to owner, not licensee or agent.

NOTES: It is the responsibility of the applicant/owner to keep the PVPO informed of any changes of address or change of ownership or assignment or owner's representative during the life of the application/certificate. The fees for filing a change of address; owner's representative; ownership or assignment; or any modification of owner's name is specified in Section 97.175 of the regulations. (See Section 101 of the Act, and Sections 97.130, 97.131, 97.175(h) of the Regulations and Rules of Practice.)

Plant Variety Protection Office
Telephone: (301) 504-5518 **FAX:** (301) 504-5291
General E-mail: PVP@mail@usda.gov
Homepage: <http://www.ams.usda.gov/science/pvpo/PVPindex.htm>

SPECIFIC INSTRUCTIONS:

To avoid conflict with other variety names in use, the applicant must check the appropriate recognized authority and **provide evidence** that the permanent name of the application variety (even if it is a parental, inbred line) has been cleared by the appropriate recognized authority before the Certificate of Protection is issued. For example, for agricultural and vegetable crops, contact: U.S. Department of Agriculture, Agricultural Marketing Service, Livestock and Seed Programs, **Seed Regulatory and Testing Branch**, 801 Summit Crossing Place, Suite C, Gastonia, North Carolina 28054-2193 Telephone: (704) 810-8870.
<http://www.ams.usda.gov/lsg/seed.htm>.

ITEM

- 19a. Give:
- (1) the genealogy, including public and commercial varieties, lines, or clones used, and the breeding method;
 - (2) the details of subsequent stages of selection and multiplication;
 - (3) evidence of uniformity and stability; and
 - (4) the type and frequency of variants during reproduction and multiplication and state how these variants may be identified
- 19b. Give a summary of the variety's distinctness. Clearly state how this application variety may be distinguished from all other varieties in the same crop. If the new variety is most similar to one variety or a group of related varieties:
- (1) identify these varieties and state all differences objectively;
 - (2) attach replicated statistical data for characters expressed numerically and demonstrate that these are clear differences; and
 - (3) submit, if helpful, seed and plant specimens or photographs (prints) of seed and plant comparisons which clearly indicate distinctness.
- 19c. Exhibit C forms are available from the PVPO Office for most crops; specify crop kind. Fill in Exhibit C (Objective Description of Variety) form as completely as possible to describe your variety.
- 19d. Optional additional characteristics and/or photographs. Describe any additional characteristics that cannot be accurately conveyed in Exhibit C. Use comparative varieties as is necessary to reveal more accurately the characteristics that are difficult to describe, such as plant habit, plant color, disease resistance, etc.
- 19e. Section 52(5) of the Act requires applicants to furnish a statement of the basis of the applicant's ownership. An Exhibit E form is available from the PVPO.
20. If "Yes" is specified (*seed of this variety be sold by variety name only, as a class of certified seed*), the applicant **MAY NOT** reverse this affirmative decision after the variety has been sold and so labeled, the decision published, or the certificate issued. However, if "No" has been specified, the applicant may change the choice. (See Regulations and Rules of Practice, Section 97.103).
23. See Sections 41, 42, and 43 of the Act and Section 97.5 of the regulations for eligibility requirements.
24. See Section 55 of the Act for instructions on claiming the benefit of an earlier filing date.

22. CONTINUED FROM FRONT (Please provide a statement as to the limitation and sequence of generations that may be certified.)

23. CONTINUED FROM FRONT (Please provide the date of first sale, disposition, transfer, or use for each country and the circumstances, if the variety (including any harvested material) or a hybrid produced from this variety has been sold, disposed of, transferred, or used in the U.S. or other countries.)

24. CONTINUED FROM FRONT (Please give the country, date of filing or issuance, and assigned reference number, if the variety or any component of the variety is protected by intellectual property right (Plant Breeder's Right or Patent).)

According to the Paperwork Reduction Act of 1995, an agency may not conduct or sponsor, and a person is not required to respond to a collection of information unless it displays a valid OMB control number. The valid OMB control number for this information collection is 0581-0055. The time required to complete this information collection is estimated to average 1.4 hours per response, including the time for reviewing instructions, searching existing data sources, gathering and maintaining the data needed, and completing and reviewing the collection of information.

The U.S. Department of Agriculture (USDA) prohibits discrimination in all its programs and activities on the basis of race, color, national origin, age, disability, and where applicable, sex, marital status, familial status, parental status, religion, sexual orientation, genetic information, political beliefs, reprisal, or because all or part of an individual's income is derived from any public assistance program (Not all prohibited bases apply to all programs.) Persons with disabilities who require alternative means for communication of program information (Braille, large print, audiotape, etc.) should contact USDA's TARGET Center at (202) 720-2600 (voice and TDD).

To file a complaint of discrimination, write to USDA, Director, Office of Civil Rights, 1400 Independence Avenue, S.W., Washington, D.C. 20250-9410, or call (800) 795-3272 (voice) or (202) 720-6382 (TDD). USDA is an equal opportunity provider and employer.

“Samson”
Hard Red Spring Wheat

#200800074

Exhibit A. Origin and Breeding History

Samson (CA905-752) is a hard red spring wheat developed by WestBred LLC and is derived from the cross “Express” x “Knudson” that was made in growth chambers in the fall of 2002. The F₃ generation was planted as a bulk in Fisher, MN in the spring of 2003 and individual plants evaluated for agronomic characteristics and general disease reactions. F₃ plant selections were made and advanced in the growth chamber in the fall of 2003 and F₄ head selections were made and advanced in Yuma, AZ in the winter of 2003-2004 as head plots. Samson is derived from a single F₅ plant selection from that nursery. Samson was advanced and evaluated in 2004 as a single 10 ft. plot in Casselton, ND and harvested as an F₆ bulk. It was advanced in a 100 ft. plot as an F₇ bulk in Yuma, AZ in winter of 2004-2005 and as an initial Breeder Seed increase (F₈ bulk, ¼ acre) in Fisher, MN in spring of 2005. A second Breeder Seed increase was grown on 12 acres in Brawley CA during the winter of 2005 – 2006 producing 850 bu of F₉ Breeder Seed. This seed was planted in the spring of 2006 in ND and MN and harvested as F₁₀ Foundation Seed (28,000 bu) in the summer of 2006.

Samson was evaluated throughout ND, MN, and SD in company trials (Table 1) and in the 2006 USDA Uniform Regional Nursery from 2004 to 2006. (Tables 2 to 7) for yield, quality, standability, general agronomics, and disease resistance. Samson was generally well adapted to the North Central Region, but because of a susceptible reaction to Fusarium Head Blight, treatment with fungicide at heading is a production requirement. Samson produces medium protein and medium test weight seed with good baking quality. Average SDS Sedimentation values are above 110 mm (Table 1).

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Samson has been observed for 5 generations of increase and testing and is uniform and stable.

Samson may contain a tall variant that is 10 – 20 cm taller than the general population at a frequency of 0.5% in Foundation Seed production fields and up to 1.0% may be observed in subsequent generations.

Table 1. Paired comparisons of Samson with Knudson and Express for average agronomic, quality, and disease characteristics in ND, SD, and MN from 2004 to 2006.

| Variety | Heading days after 6-1 | Height cm | Leaf Rust 1-7 ¹ | Foliar Disease 1-7 ¹ | Stripe Rust 1-7 ¹ | Scab ² % | Protein % | Sed ³ mm | Test Weight lb/bu | Yield bu/a | Falling Number sec |
|----------------------------|---------------------------|--------------|----------------------------------|---------------------------------------|------------------------------------|------------------------|--------------|------------------------|-------------------------|---------------|--------------------------|
| Overall 2004 - 2006 | | | | | | | | | | | |
| No. Locs. | 16 | 9 | 5 | 2 | 1 | 5 | 13 | 13 | 13 | 16 | 1 |
| Express | 23.6 | 66.8 | 3.6 | 5.0 | 3.0 | 11.4 | 14.5 | 111.0 | 59.1 | 58.8 | 485.0 |
| Samson (CA905-752) | 23.5 | 70.6 | 3.2 | 2.0 | 6.0 | 8.4 | 14.1 | 115.8 | 59.9 | 64.9 | 464.0 |
| Overall 2004 - 2006 | | | | | | | | | | | |
| No. Locs. | 21 | 14 | 4 | 3 | 1 | 4 | 12 | 12 | 12 | 21 | 1 |
| Knudson | 26.7 | 73.9 | 1.8 | 2.7 | 6.0 | 3.1 | 14.1 | 117.7 | 61.2 | 61.2 | 504.0 |
| Samson (CA905-752) | 26.7 | 69.3 | 3.3 | 2.7 | 6.0 | 8.3 | 14.1 | 115.8 | 60.2 | 62.1 | 464.0 |

¹Disease rating scored 1=resistant to 7=susceptible.

²% of visually scabby kernels (VSK).

³Flour SDS sedimentation value, a measure of gluten strength. Values above 110 mm are indicative of good baking quality.

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Table 2. 2006 Hard Red Spring Wheat Uniform Regional Nursery, Summary of Means Across 21 Locations in ND, SD, MN, MT, WY, NE, MAN, and SASK*.

| Line | Yield Bu/Ac | | Test Wt. Lb/Bu | | Heading d from 6-1 | Height cm | Lodging 0-9** | Protein % |
|-------------------------|----------------|------|-------------------|------|-----------------------|--------------|------------------|--------------|
| No. Locations | 19 | Rank | 19 | Rank | 17 | 19 | 3 | 10 |
| MN03358-4 | 64.8 | 1 | 60.4 | 19 | 23 | 80 | 1.7 | 14.3 |
| SD3868 | 63.1 | 2 | 59.4 | 29 | 21 | 89 | 0.9 | 13.3 |
| MN02255 | 63.0 | 3 | 60.1 | 23 | 21 | 80 | 0.4 | 14.4 |
| SD3943 | 61.9 | 4 | 60.8 | 12 | 19 | 82 | 0.3 | 13.5 |
| MT 0416 | 61.8 | 5 | 59.5 | 27 | 22 | 79 | 1.7 | 13.7 |
| MT 0415 | 61.5 | 6 | 60.1 | 23 | 22 | 83 | 0.3 | 14.6 |
| SD3944 | 61.4 | 7 | 60.4 | 19 | 19 | 84 | 2.2 | 13.9 |
| MN02252-A | 61.2 | 8 | 60.3 | 21 | 23 | 83 | 0.7 | 14.6 |
| WA007998 | 61.1 | 9 | 58.1 | 38 | 20 | 79 | 1.2 | 14.3 |
| SD3851 | 60.9 | 10 | 61.8 | 1 | 18 | 85 | 1.2 | 14.4 |
| Verde | 60.9 | 10 | 59.5 | 27 | 23 | 77 | 0.3 | 14.4 |
| BW864 | 60.4 | 12 | 60.9 | 8 | 20 | 81 | 0.3 | 15.0 |
| CA905-752 <i>Samson</i> | 60.4 | 12 | 59.6 | 26 | 21 | 71 | 0.3 | 14.4 |
| ND04/3-19 | 60.3 | 14 | 58.9 | 35 | 24 | 82 | 0.2 | 14.0 |
| 98S0051-1-14 | 59.9 | 15 | 60.7 | 14 | 21 | 76 | 0.0 | 14.2 |
| NE-188-24 | 59.9 | 15 | 57.3 | 40 | 24 | 78 | 0.6 | 13.5 |
| ND04/3-18 | 59.7 | 17 | 61.8 | 1 | 20 | 81 | 0.5 | 14.4 |
| MN02072-7 | 59.7 | 17 | 61.6 | 4 | 20 | 74 | 0.3 | 14.6 |
| NE-108-46 | 59.6 | 19 | 59.0 | 33 | 22 | 76 | 0.8 | 13.5 |
| NDSW0430 | 59.5 | 20 | 61.2 | 7 | 22 | 81 | 1.0 | 14.3 |
| BZ901-543W | 59.3 | 21 | 59.3 | 31 | 20 | 82 | 1.5 | 14.2 |
| ND04/3-21 | 58.8 | 22 | 61.5 | 6 | 20 | 81 | 0.2 | 14.7 |
| 2375 | 58.6 | 23 | 60.5 | 18 | 21 | 82 | 0.4 | 13.8 |
| SD4001 | 58.5 | 24 | 60.7 | 14 | 21 | 83 | 0.0 | 13.9 |
| ND04/3-20 | 58.2 | 25 | 59.0 | 33 | 23 | 92 | 0.2 | 14.2 |
| ND03/1-13 | 57.4 | 26 | 60.7 | 14 | 20 | 84 | 0.5 | 14.3 |
| MN03306-1 | 56.9 | 27 | 60.7 | 14 | 20 | 78 | 0.6 | 14.3 |
| 99S0362-21 | 56.7 | 28 | 60.9 | 8 | 21 | 71 | 0.0 | 14.4 |
| 98S0113-20-23 | 56.2 | 29 | 60.9 | 8 | 19 | 71 | 0.1 | 15.4 |
| BW379 | 55.7 | 30 | 61.6 | 4 | 19 | 82 | 0.9 | 15.1 |
| 05M SP5 | 55.7 | 30 | 60.9 | 8 | 22 | 79 | 0.9 | 14.9 |
| BW342 | 55.7 | 30 | 60.8 | 12 | 21 | 86 | 0.7 | 14.8 |
| NDSW0481 | 55.0 | 33 | 59.4 | 29 | 23 | 85 | 1.3 | 14.7 |
| PT436 | 54.9 | 34 | 59.2 | 32 | 21 | 89 | 0.9 | 14.7 |
| CA902-704 | 54.5 | 35 | 61.7 | 3 | 26 | 78 | 0.0 | 15.4 |
| NDSW0449 | 54.4 | 36 | 60.0 | 25 | 25 | 84 | 0.0 | 14.9 |
| Keene | 54.0 | 37 | 60.3 | 21 | 23 | 95 | 1.8 | 14.6 |
| CA905-751 | 54.0 | 37 | 57.7 | 39 | 25 | 71 | 0.2 | 14.7 |
| Chris | 43.9 | 39 | 58.5 | 36 | 24 | 99 | 2.0 | 15.2 |
| Marquis | 42.1 | 40 | 58.2 | 37 | 25 | 103 | 1.8 | 14.4 |
| Mean | 58.1 | | 60.1 | | 21.6 | 81.9 | 0.7 | 14.4 |

*Taken from Table 22 of the 2006 USDA HRSW Uniform Regional Nursery Report.

**Lodging scored 0 (least) to 9 (highest).

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Table 3. 2006 Hard Red Spring Wheat Uniform Regional Nursery, Winnipeg, Canada.*

| Line | Yield Bu/Ac | Test | Maturity days | Height cm | Protein % | 1000 | Leaf Rust* | | Stem Rust** | |
|------------------|----------------|--------------|------------------|--------------|--------------|----------|------------|-----|-------------|------|
| | | Wt. Lb/Bu | | | | KWT g | Sev | Inc | Sev | Inc |
| 2375 | 90.3 | 62.5 | 83 | 91 | 11.1 | 39.2 | 5 | MR | 1 | R |
| SD3868 | 89.3 | 60.8 | 84 | 97 | 11.8 | 36.1 | 5 | MR | 5 | RMR |
| MN03358-4 | 88.8 | 62.4 | 84 | 88 | 11.6 | 34.0 | 0 | R | 3 | R |
| ND04/3-19 | 86.9 | 61.8 | 85 | 87 | 10.7 | 38.9 | 0 | R | 5 | R |
| Verde | 86.3 | 61.6 | 88 | 82 | 13.3 | 36.2 | 0 | R | 7 | I |
| BW864 | 85.0 | 63.6 | 86 | 90 | 13.1 | 40.2 | 20 | MR | 2 | R |
| ND04/3-20 | 84.8 | 62.2 | 85 | 97 | 11.1 | 37.3 | 0 | R | 1 | R |
| SD3943 | 84.6 | 62.2 | 83 | 93 | 11.1 | 31.6 | 0 | R | 2 | R |
| SD4001 | 84.4 | 63.1 | 87 | 95 | 11.7 | 33.5 | 0 | R | 12 | I |
| MT 0416 | 83.1 | 62.4 | 86 | 85 | 12.3 | 34.3 | 5 | MR | 3 | RMR |
| WA007998 | 82.8 | 61.4 | 85 | 85 | 12.9 | 43.2 | 10 | MR | 20 | MS |
| SD3944 | 82.5 | 61.2 | 82 | 94 | 11.2 | 32.8 | 0 | R | 2 | R |
| ND03/1-13 | 82.3 | 63.1 | 85 | 91 | 12.5 | 38.3 | 0 | R | 1 | R |
| NE-108-46 | 81.8 | 61.5 | 90 | 81 | 11.1 | 39.9 | 0 | R | 2 | R |
| NDSW0430 | 81.3 | 63.6 | 86 | 87 | 12.0 | 36.5 | 0 | R | 2 | R |
| MN02255 | 81.1 | 62.2 | 83 | 86 | 11.9 | 33.6 | 0 | R | 1 | R |
| SD3851 | 80.7 | 63.9 | 85 | 93 | 11.9 | 35.9 | 3 | R | 2 | R |
| PT436 | 80.1 | 62.5 | 84 | 100 | 12.5 | 34.5 | 45 | M | 1 | R |
| MN02252-A | 80.0 | 62.4 | 85 | 88 | 12.3 | 35.0 | 5 | MR | 1 | R |
| ND04/3-21 | 79.0 | 63.9 | 85 | 91 | 13.3 | 36.5 | 0 | R | 1 | R |
| 98S0051-1-14 | 78.9 | 63.2 | 86 | 82 | 12.2 | 37.9 | 15 | MR | 3 | R |
| MT 0415 | 78.4 | 62.5 | 84 | 89 | 12.2 | 38.3 | 30 | M | 3 | R |
| Keene | 78.3 | 62.9 | 87 | 106 | 12.2 | 33.0 | 45 | M | 1 | R |
| MN02072-7 | 77.4 | 63.8 | 83 | 77 | 12.2 | 35.2 | 15 | MR | 10 | MR |
| CA905-751 | 76.7 | 61.9 | 89 | 75 | 12.1 | 39.4 | 0 | R | 15 | MR-S |
| Mckenzie*** | 76.5 | 61.8 | 83 | 101 | 11.9 | 32.8 | 0 | R | 2 | R |
| CA905-752 Samson | 76.4 | 62.2 | 85 | 75 | 12.8 | 35.0 | 15 | MR | 1 | R |
| NDSW0481 | 76.1 | 62.4 | 85 | 91 | 12.6 | 35.6 | 0 | R | 5 | RMR |
| NDSW0449 | 75.9 | 62.6 | 86 | 89 | 12.1 | 32.7 | 35 | M | 10 | RMR |
| ND04/3-18 | 75.7 | 63.9 | 83 | 88 | 12.3 | 35.6 | 0 | R | 2 | R |
| Chris | 74.2 | 62.0 | 87 | 112 | 12.6 | 32.9 | 15 | M | 5 | RMR |
| 05M SP5 | 73.9 | 64.2 | 85 | 84 | 12.4 | 36.1 | 5 | MR | 20 | I |
| MN03306-1 | 73.5 | 62.5 | 83 | 88 | 11.7 | 29.4 | 0 | R | 1 | R |
| BW342 | 73.4 | 63.1 | 84 | 95 | 13.0 | 34.6 | 0 | R | 1 | R |
| Marquis | 73.1 | 62.3 | 86 | 112 | 11.9 | 34.4 | 35 | M | 25 | I |
| 99S0362-21 | 72.8 | 62.6 | 86 | 75 | 12.7 | 38.5 | 0 | R | 1 | R |
| NE-188-24 | 71.6 | 61.0 | 91 | 79 | 11.1 | 36.6 | 0 | R | 1 | R |
| 98S0113-20-23 | 70.9 | 61.6 | 85 | 73 | 13.4 | 33.4 | 0 | R | 1 | R |
| BW379 | 70.6 | 62.8 | 86 | 90 | 14.2 | 36.4 | 35 | M | 2 | R |
| CA902-704 | 67.2 | 64.0 | 88 | 78 | 13.7 | 33.6 | 15 | M | 15 | RMR |
| Mean | 79.2 | 62.5 | 85.3 | 89.0 | 12.2 | 35.7 | | | | |
| LSD | 8.8 | 0.6 | 2.4 | 5.1 | 1.3 | 1.3 | | | | |
| CV | 6.8 | 0.5 | 1.7 | 3.5 | 6.5 | 2.2 | | | | |

* Taken from Table 22 of the 2006 USDA HRSW Uniform Regional Nursery Report.

**Leaf and stem rust reactions determined by Dr. B. McCallum and Dr. T. Fetch respectively, at Glenlea, MB.

*** Local replacement for BZ901-543W which could not be provided due to phytosanitary restrictions.

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Table 4. 2006 Hard Red Spring Wheat Uniform Regional Nursery, Pullman, WA.*

| Line | Stripe Rust | | | | | | | | |
|-------------------------|-------------|----------|------------|--------|---------|-----------|-----------|----------|-------|
| | Yield | Test Wt. | Heading | Height | Protein | Reading 1 | Reading 2 | | |
| | Bu/Ac | Lb/Bu | d from 6-1 | cm | % | Inf Type | % Inf | Inf Type | % Inf |
| BZ901-543W | 86.2 | 59.6 | 23 | 97 | 13.2 | 0 | 0 | 0 | 0 |
| 98S0051-1-14 | 82.0 | 60.8 | 22 | 86 | 14.2 | 4 | 5 | 3 | 20 |
| BW864 | 78.2 | 59.7 | 22 | 91 | 15.1 | 6 | 5 | 5 | 20 |
| NE-108-46 | 78.0 | 57.2 | 24 | 89 | 13.0 | 7 | 2 | 4 | 5 |
| MN03358-4 | 76.7 | 60.2 | 25 | 107 | 14.5 | 6 | 5 | 3 | 5 |
| MT 0416 | 76.3 | 57.4 | 24 | 89 | 14.1 | 8 | 10 | 8 | 25 |
| WA007998 | 74.7 | 56.1 | 22 | 91 | 14.7 | 0 | 0 | 3 | 5 |
| SD3868 | 74.5 | 59.2 | 27 | 112 | 13.7 | 0 | 0 | 0 | 0 |
| BW379 | 72.5 | 60.1 | 19 | 89 | 15.0 | 5 | 5 | 8 | 25 |
| SD3851 | 72.2 | 60.9 | 19 | 102 | 14.9 | 2 | 2 | 4 | 20 |
| SD4001 | 71.8 | 58.4 | 26 | 99 | 15.1 | 4 | 10 | 4 | 20 |
| SD3943 | 71.1 | 58.7 | 19 | 102 | 13.8 | 5 | 2 | 5 | 40 |
| 99S0362-21 | 70.6 | 60.0 | 25 | 76 | 14.3 | 8 | 10 | 5 | 40 |
| 98S0113-20-23 | 69.5 | 60.4 | 22 | 86 | 14.0 | 8 | 15 | 8 | 50 |
| CA905-752 <i>Sensen</i> | 68.8 | 57.3 | 24 | 81 | 13.7 | 7 | 5 | 7 | 80 |
| MN02255 | 68.7 | 58.3 | 25 | 91 | 13.9 | 6 | 10 | 3 | 20 |
| CA902-704 | 68.5 | 61.7 | 29 | 84 | 15.4 | 2 | 2 | 5 | 30 |
| ND04/3-18 | 68.2 | 60.1 | 21 | 91 | 14.0 | 8 | 5 | 8 | 70 |
| MN02072-7 | 67.1 | 60.1 | 24 | 86 | 15.0 | 7 | 5 | 7 | 40 |
| MN03306-1 | 66.7 | 59.8 | 23 | 99 | 14.1 | 7 | 15 | 5 | 25 |
| BW342 | 66.5 | 60.0 | 24 | 104 | 15.4 | 2 | 2 | 6 | 15 |
| Keene | 66.4 | 58.9 | 27 | 117 | 14.7 | 7 | 5 | 6 | 30 |
| SD3944 | 66.2 | 57.7 | 22 | 102 | 14.0 | 8 | 30 | 5 | 50 |
| CA905-751 | 65.9 | 55.6 | 28 | 79 | 14.9 | 6 | 2 | 5 | 20 |
| 2375 | 64.4 | 57.7 | 25 | 107 | 15.2 | 8 | 20 | 5 | 60 |
| ND04/3-19 | 63.4 | 55.7 | 27 | 89 | 14.8 | 8 | 5 | 8 | 60 |
| NE-188-24 | 63.0 | 53.7 | 28 | 86 | 13.6 | 8 | 5 | 5 | 30 |
| MT 0415 | 62.9 | 57.3 | 25 | 94 | 15.6 | 8 | 10 | 8 | 25 |
| 05M SP5 | 62.7 | 59.9 | 26 | 89 | 13.4 | 8 | 30 | 8 | 90 |
| ND03/1-13 | 62.7 | 58.1 | 23 | 97 | 14.3 | 7 | 2 | 7 | 70 |
| ND04/3-21 | 62.4 | 59.0 | 20 | 86 | 14.5 | 8 | 10 | 8 | 50 |
| PT436 | 62.3 | 58.2 | 25 | 104 | 15.8 | 4 | 5 | 6 | 25 |
| NDSW0430 | 61.6 | 56.8 | 25 | 99 | 14.2 | 8 | 15 | 8 | 70 |
| ND04/3-20 | 59.6 | 56.3 | 25 | 99 | 14.5 | 7 | 5 | 8 | 60 |
| NDSW0449 | 59.1 | 58.0 | 27 | 97 | 15.1 | 8 | 10 | 7 | 60 |
| MN02252-A | 58.0 | 56.2 | 27 | 94 | 14.8 | 3 | 2 | 6 | 60 |
| Verde | 55.9 | 53.4 | 26 | 84 | 15.7 | 7 | 10 | 3 | 10 |
| Marquis | 49.0 | 57.6 | 28 | 130 | 15.4 | 3 | 2 | 2 | 5 |
| Chris | 46.6 | 55.5 | 28 | 124 | 16.2 | 3 | 2 | 3 | 15 |
| NDSW0481 | 46.5 | 55.5 | 25 | 94 | 14.6 | 8 | 25 | 8 | 90 |
| Mean | 66.7 | 58.2 | 24.4 | 95.6 | 14.6 | | | | |

*Taken from Table 20 of the 2006 USDA HRSW Uniform Regional Nursery Report.

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Table 5. 2006 Hard Red Spring Wheat Uniform Regional Nursery Stripe Rust Under Natural Infection at Spillman (Loc 1) and Whitlow (Loc 4) Farms near Pullman, WA. IT = Infection Type; % = Severity (from X. Chen, USDA-ARS)*

| Line | Loc 1a - 7/5/2006 Flowering-milk | | Loc 1b - 7/12/2006 Flowering | | Loc 4 - 7/17/2006 Soft dough | |
|------------------|-------------------------------------|----|---------------------------------|-----|---------------------------------|-----|
| | IT** | % | IT | % | IT | % |
| Marquis | 5 | 20 | 5 | 10 | 5 | 20 |
| Chris | 8 | 20 | 8 | 30 | 8 | 10 |
| 2375 | 8 | 70 | 8 | 50 | 8 | 30 |
| Verde | 8 | 30 | 8 | 5 | 2 | 1 |
| Keene | 8 | 30 | 8 | 10 | 8 | 20 |
| MN02072-7 | 8 | 50 | 8 | 40 | 8 | 40 |
| MN02252-A | 8 | 80 | 8 | 50 | 8 | 70 |
| MN02255 | 8 | 30 | 8 | 10 | 2 | 1 |
| MN03306-1 | 8 | 40 | 8 | 5 | 2 | 1 |
| MN03358-4 | 3 | 10 | 2 | 1 | 2 | 1 |
| SD3851 | 8 | 50 | 8 | 50 | 8 | 50 |
| SD3868 | 0,8 | 5 | 2 | 1 | 2 | 1 |
| SD3943 | 8 | 80 | 8 | 50 | 8 | 40 |
| SD3944 | 8 | 70 | 8 | 40 | 8 | 30 |
| SD4001 | 8 | 20 | 8 | 20 | 8 | 10 |
| NDSW0430 | 8 | 90 | 8 | 60 | 8 | 90 |
| NDSW0449 | 8 | 70 | 8 | 40 | 8 | 20 |
| NDSW0481 | 8 | 95 | 8 | 100 | 8 | 100 |
| MT 0415 | 8 | 30 | 8 | 30 | 8 | 30 |
| MT 0416 | 8 | 40 | 8 | 40 | 8 | 50 |
| WA007998 | 5 | 10 | 2 | 1 | 2 | 1 |
| NE-108-46 | 3,8 | 10 | 2 | 1 | 2 | 1 |
| NE-188-24 | 5 | 20 | 2 | 5 | 2 | 1 |
| ND03/1-13 | 8 | 70 | 8 | 60 | 8 | 60 |
| ND04/3-18 | 8 | 90 | 8 | 50 | 8 | 70 |
| ND04/3-19 | 8 | 60 | 8 | 50 | 8 | 60 |
| ND04/3-20 | 8 | 50 | 8 | 30 | 8 | 50 |
| ND04/3-21 | 8 | 80 | 8 | 60 | 8 | 80 |
| PT436 | 3-5 | 20 | 3-5 | 30 | 3 | 10 |
| BW342 | 8 | 20 | 8 | 40 | 8 | 20 |
| BW379 | 8 | 40 | 8 | 40 | 8 | 40 |
| BW864 | 8 | 50 | 8 | 30 | 8 | 20 |
| CA905-752 Samson | 8 | 70 | 8 | 50 | 8 | 50 |
| CA905-751 | 5-8 | 40 | 5 | 10 | 5 | 10 |
| CA902-704 | 8 | 30 | 8 | 30 | 8 | 20 |
| BZ901-543W | 0 | 0 | 2 | 1 | 2 | 1 |
| 99S0362-21 | 8 | 40 | 8 | 30 | 2 | 5 |
| 98S0113-20-23 | 8 | 80 | 8 | 40 | 8 | 90 |
| 98S0051-1-14 | 8 | 30 | 8 | 10 | 2 | 5 |
| 05M SP5 | 8 | 95 | 8 | 100 | 8 | 90 |

* Taken from Table 27 of the 2006 USDA HRSW Uniform regional Nursery Report.

**Infection types (IT) were based on a 0-9 scale, in which 0-3 are generally consider resistant, 4-6 (recorded as 5 in fields) intermediate, and 7-9 susceptible (recorded as 8).

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Table 6. 2006 Hard Red Spring Wheat Uniform Regional Nursery Seedling Leaf Rust Reactions, St. Paul, MN. (From J. Kolmer, USDA-ARS)*

| Line | TNRJ | MCDS | MHDS | TGBG | SBDG | THBJ | TCTD | MJBJ | Gene(s) |
|------------------|------|------|------|------|------|------|------|------|-------------|
| Marquis | 3+ | 4 | 4 | x | 4 | 4 | 4 | 3+ | none |
| Chris | | 33+ | | 3+ | 3+ | 4 | 3+ | 3+ | none |
| 2375 | 22+3 | 23 | 33+ | 33- | 2 | 23 | ; | 3+ | 10 |
| Verde | ; | ; | 2+3 | ; | ; | ; | ; | ; | |
| Keene | 2+ | ; | 0; | 1- | ; | ; | ; | ; | + |
| MN02072-7 | 2+3 | ; | ; | ; | 0; | 3 | ; | 2 | 2a, 10, 14a |
| MN02252-A | ; | ; | 0; | 3 | ; | 33+ | ; | ; | 2a, 16 |
| MN02255 | ; | ; | 0; | 1 | ; | ; | 0; | ; | + |
| MN03306-1 | 1- | ; | ; | ; | ; | ; | ; | ; | + |
| MN03358-4 | 22+3 | 23 | 3 | ; | ; | 3- | ; | 33+ | 10, 14a |
| SD3851 | ; | ; | 0; | ; | ; | 1- | ; | 0; | + |
| SD3868 | 3+ | 3+ | 23 | ; | ; | 33+ | ; | 3 | 14a |
| SD3943 | 1- | ; | ; | ; | ; | ; | ; | ; | + |
| SD3944 | ; | ; | ; | ; | ; | ; | ; | ; | + |
| SD4001 | ; | 1- | ; | ; | ; | 3 | 2- | 3 | 14a, 16 |
| NDSW0430 | ; | ; | 0; | ; | ; | ; | ; | 0; | + |
| NDSW0449 | 2- | ; | 0; | ; | ; | ; | ; | ; | + |
| NDSW0481 | 1- | ; | ; | 2 | ; | 2- | ; | 2+3 | 16, 23 |
| MT 0415 | 1- | ; | 0; | 3 | ; | 33+ | ; | ; | 2a, 16 |
| MT 0416 | 3+ | 3+ | 3+ | ; | 2- | 3+ | 3+ | 3+ | 14a |
| WA007998 | 3+ | 2- | ; | 3+ | ; | 33+ | ; | 3+ | 10, 23 |
| NE-108-46 | 22+ | 33+ | 33+ | 2+3 | ; | 33+ | ; | 3+ | 14a, 23 |
| NE-188-24 | ; | 0; | 0; | 0; | ; | 0; | 0; | 0; | + |
| ND03/1-13 | ; | 0; | 0; | 1- | ; | ; | 0; | 0; | + |
| ND04/3-18 | ; | 0; | 0; | 1- | ; | ; | ; | 0; | + |
| ND04/3-19 | ; | 0; | 0; | 1- | ; | ; | 0; | 0; | + |
| ND04/3-20 | ; | 0; | 0; | ; | ; | ; | 0; | ; | + |
| ND04/3-21 | ; | 0; | 0; | ; | ; | ; | 0; | 0; | + |
| PT436 | 1- | ; | 2- | 2+ | ; | 2+ | 0; | 22+ | 16 |
| BW342 | ; | ; | ; | ; | ; | ; | 0; | ; | + |
| BW379 | 1- | ; | 2- | 3 | ; | 22- | 0; | 3+ | 16 |
| BW864 | 33+ | ; | 3+ | 3+ | ; | 33+ | 0; | 0; | 2a, 10, 16 |
| CA905-752 Samson | ; | ; | ; | ; | ; | 3 | 0; | 2+ | 14a, 16, 23 |
| CA905-751 | ; | ; | ; | 33+ | ; | 3 | ; | 22+ | 16, 23 |
| CA902-704 | 1- | 1- | 3+ | ; | ; | 1- | 3- | ; | + |
| BZ901-543W | 33+ | 22+ | ; | ; | ; | 2+3 | 1- | 2+3 | 10, 14a, 23 |
| 99S0362-21 | ; | ; | 33+ | ; | ; | 3 | ; | 3+ | 14a, 16 |
| 98S0113-20-23 | ; | ; | 2- | 1- | ; | 2+3 | 2- | 2+3 | 14a, 16 |
| 98S0051-1-14 | ; | ; | 2- | ; | ; | 2+ | ; | 2+3 | 14a, 16 |
| 05M SP5 | 33+ | ; | ; | ; | ; | ; | ; | 0; | treated |

Genes postulated based on infection types of leaf rust races.

Genes Lr16, Lr23 are effective in field plot tests.

Gene Lr14a may now be effective since many races are now low to this gene.

* Taken from Table 26 of the USDA HRSW Uniform Regional Nursery Report.

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Table 7. 2006 Hard Red Spring Wheat Uniform Regional Nursery Scab Report, Crookston, MN.*

| Line | Heading d from 6-1 | VSK % | DON ppm | Incidence % | Severity % | Disease Index | 30 SSW** g | Micro TWT g |
|------------------|-----------------------|----------|------------|----------------|---------------|------------------|------------------|-------------------|
| Marquis | 37.0 | 20.0 | 4.3 | 75.0 | 20.4 | 15.2 | 17.8 | 11.0 |
| Chris | 38.5 | 27.5 | 5.7 | 82.5 | 36.2 | 29.7 | 15.0 | 10.6 |
| 2375 | 34.0 | 20.0 | 7.4 | 87.5 | 26.5 | 23.1 | 19.7 | 10.8 |
| Verde | 37.0 | 25.0 | 7.5 | 100.0 | 45.7 | 45.7 | 12.6 | 10.2 |
| Keene | 35.0 | 13.5 | 8.2 | 97.5 | 42.2 | 41.2 | 17.3 | 10.5 |
| MN02072-7 | 32.0 | 26.0 | 10.3 | 100.0 | 49.6 | 49.6 | 12.0 | 10.3 |
| MN02252-A | 36.5 | 20.0 | 7.5 | 97.5 | 27.5 | 26.9 | 17.7 | 10.6 |
| MN02255 | 33.5 | 22.5 | 8.1 | 97.5 | 36.5 | 35.8 | 17.5 | 10.6 |
| MN03306-1 | 31.0 | 17.5 | 7.2 | 90.0 | 10.5 | 9.7 | 16.2 | 11.2 |
| MN03358-4 | 36.5 | 11.5 | 5.6 | 72.5 | 9.6 | 6.9 | 23.0 | 11.4 |
| SD3851 | 30.5 | 5.0 | 2.4 | 67.5 | 12.0 | 8.0 | 18.2 | 11.3 |
| SD3868 | 36.0 | 10.5 | 4.4 | 82.5 | 15.8 | 13.4 | 31.7 | 11.1 |
| SD3943 | 30.0 | 7.0 | 3.5 | 75.0 | 11.8 | 8.2 | 18.2 | 10.8 |
| SD3944 | 30.0 | 7.0 | 2.4 | 85.0 | 26.3 | 22.4 | 17.7 | 11.1 |
| SD4001 | 32.5 | 14.0 | 4.4 | 60.0 | 10.5 | 6.3 | 20.4 | 11.1 |
| NDSW0430 | 35.0 | 12.0 | 5.4 | 90.0 | 15.4 | 13.6 | 23.5 | 11.2 |
| NDSW0449 | 36.0 | 15.0 | 5.1 | 72.5 | 14.2 | 10.5 | 18.6 | 10.6 |
| NDSW0481 | 35.0 | 21.0 | 9.0 | 92.5 | 32.7 | 30.2 | 18.6 | 10.7 |
| MT 0415 | 31.5 | 37.5 | 10.5 | 100.0 | 55.1 | 55.1 | 15.8 | 9.9 |
| MT 0416 | 32.5 | 27.5 | 7.6 | 100.0 | 64.9 | 64.9 | 7.9 | — |
| WA007998 | 32.0 | 37.5 | 12.2 | 100.0 | 52.4 | 52.4 | 12.9 | 10.1 |
| NE-108-46 | 36.5 | 57.5 | 11.6 | 95.0 | 42.8 | 40.3 | 15.4 | 9.8 |
| NE-188-24 | 38.0 | 25.0 | 12.7 | 100.0 | 54.0 | 54.0 | 9.6 | 9.5 |
| ND03/1-13 | 31.5 | 13.5 | 4.5 | 97.5 | 20.5 | 20.1 | 16.3 | 10.8 |
| ND04/3-18 | 32.0 | 9.0 | 5.2 | 97.5 | 17.0 | 16.7 | 17.2 | 11.6 |
| ND04/3-19 | 37.5 | 12.0 | 6.1 | 80.0 | 19.8 | 16.1 | 21.9 | 11.2 |
| ND04/3-20 | 35.5 | 15.0 | 7.7 | 97.5 | 28.1 | 27.5 | 15.1 | 10.2 |
| ND04/3-21 | 32.0 | 11.0 | 6.9 | 92.5 | 15.7 | 14.9 | 18.9 | 11.4 |
| PT436 | 31.0 | 15.0 | 3.1 | 70.0 | 30.2 | 20.9 | 16.3 | 10.4 |
| BW342 | 30.5 | 13.5 | 5.2 | 75.0 | 19.7 | 17.0 | 17.2 | 11.0 |
| BW379 | 30.5 | 7.0 | 5.0 | 95.0 | 13.5 | 12.9 | 21.4 | 11.8 |
| BW864 | 31.0 | 17.0 | 10.3 | 97.5 | 17.9 | 17.5 | 15.7 | 10.7 |
| CA905-752 Samson | 33.0 | 37.5 | 19.6 | 100.0 | 74.4 | 74.4 | 14.5 | 10.2 |
| CA905-751 | 36.0 | 30.0 | 21.5 | 97.5 | 56.0 | 54.6 | 19.1 | 10.1 |
| CA902-704 | 38.5 | 9.0 | 5.4 | 85.0 | 22.4 | 19.1 | 19.0 | 12.2 |
| BZ901-543W | 32.0 | 22.5 | 11.2 | 100.0 | 57.0 | 57.0 | 18.1 | 10.4 |
| 99S0362-21 | 33.0 | 32.5 | 11.6 | 97.5 | 33.8 | 32.9 | 17.6 | 10.6 |
| 98S0113-20-23 | 30.0 | 30.0 | 10.0 | 97.5 | 46.3 | 45.6 | 14.5 | 10.1 |
| 98S0051-1-14 | 33.0 | 35.0 | 12.3 | 100.0 | 46.4 | 46.4 | 14.6 | 10.2 |
| 05M SP5 | 37.0 | 7.0 | 6.0 | 55.0 | 12.0 | 6.7 | 21.7 | 11.4 |
| Alsen (MR ck) | 32.5 | 10.0 | 6.8 | 92.5 | 24.5 | 22.4 | 16.0 | 11.6 |
| BacUp (MR ck) | 30.0 | 9.0 | 4.4 | 67.5 | 10.3 | 7.5 | 15.1 | 11.3 |
| Roblin (sus ck) | 30.0 | 65.0 | 7.1 | 100.0 | 77.8 | 77.8 | 14.8 | 9.9 |
| Wheaton (sus ck) | 36.5 | 67.5 | 16.7 | 100.0 | 79.8 | 79.8 | 11.3 | 9.0 |
| MN00269 (sus ck) | 39.0 | 42.5 | 16.9 | 100.0 | 79.3 | 79.3 | 6.6 | — |
| Mean | 33.7 | 22.1 | 8.1 | 89.2 | 33.6 | 31.8 | 16.9 | 10.7 |
| LSD | 2.0 | 10.8 | | 19.4 | 18.0 | 17.6 | 4.5 | 0.8 |
| CV | 2.9 | 24.3 | | 10.6 | 24.5 | 27.4 | 26.4 | 3.8 |

* Taken from Table 28 of the 2006 USDA HRSW Uniform Regional Nursery Report.

**30 SSW = 30 spike seed weight. This is the sample used to determine VSK.

Exhibit B. Statement of Distinctness

#200800074

Samson is most similar to the variety Express but differs in these respects.

1) Samson has green leaves at the boot stage. Express has blue green leaves at the boot stage (due to an heavy accumulation of wax).

2) Samson has glumes that are medium length and width, and light tan in color.

Express has long wide glumes that are white in color.

The above comparison, along with the complete Objective Description (Exhibit C) show Samson to be a novel variety of hard red spring wheat.

According to the Paperwork Reduction Act of 1995, an agency may not conduct or sponsor, and a person is not required to respond to a collection of information unless it displays a valid OMB control number. The valid OMB control number for this information collection is 0581-0055. The time required to complete this information collection is estimated to average 2.5 hours per response, including the time for reviewing instructions, searching existing data sources, gathering and maintaining the data needed, and completing and reviewing the collection of information.

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**U.S. DEPARTMENT OF AGRICULTURE
AGRICULTURAL MARKETING SERVICE
SCIENCE AND TECHNOLOGY
PLANT VARIETY PROTECTION OFFICE
BELTSVILLE, MD 20705**

Exhibit C

**OBJECTIVE DESCRIPTION OF VARIETY
Wheat (*Triticum* spp.)**

| | | |
|--|--|---|
| NAME OF APPLICANT (S) WestBred LLC | TEMPORARY OR EXPERIMENTAL DESIGNATION CA905-752 | VARIETY NAME Samson |
| ADDRESS (Street and No. or RD No., City, State, Zip Code and Country) 81 Timberline drive Bozeman, MT 59718-8184 | | FOR OFFICIAL USE ONLY PVPO NUMBER #200800074 |

PLEASE READ ALL INSTRUCTIONS CAREFULLY:

Place the appropriate number that describes the varietal character of this variety in the boxes below. Place a zero in the first box (e.g.,

| | | |
|---|---|---|
| 0 | 9 | 9 |
|---|---|---|

 or

| | |
|---|---|
| 0 | 9 |
|---|---|

) when number is either 99 or less or 9 or less respectively. Data for quantitative plant characters should be based on a minimum of 100 plants. Comparative data should be determined from varieties entered in the same trial. Royal Horticultural Society or any recognized color standard may be used to determine plant colors; designate system used: _____. Please answer all questions for your variety; lack of response may delay progress of your application.

1. KIND:

- | | | |
|---|---------------------------|------------|
| <table border="1"><tr><td>1</td></tr></table> | 1 | 1 = Common |
| 1 | | |
| | 2 = Durum | |
| | 3 = Club | |
| | 4 = Other (Specify) _____ | |

2. VERNALIZATION:

- | | | |
|---|---------------------------|------------|
| <table border="1"><tr><td>1</td></tr></table> | 1 | 1 = Spring |
| 1 | | |
| | 2 = Winter | |
| | 3 = Other (Specify) _____ | |

3. COLEOPTILE ANTHOCYANIN:

- | | | | |
|---|---|------------|-------------|
| <table border="1"><tr><td>1</td></tr></table> | 1 | 1 = Absent | 2 = Present |
| 1 | | | |

4. JUVENILE PLANT GROWTH:

- | | | | | |
|---|---|---------------|----------------|-----------|
| <table border="1"><tr><td>3</td></tr></table> | 3 | 1 = Prostrate | 2 = Semi-Erect | 3 = Erect |
| 3 | | | | |

5. PLANT COLOR: (boot stage)

- | | | |
|---|----------------|------------------|
| <table border="1"><tr><td>2</td></tr></table> | 2 | 1 = Yellow-Green |
| 2 | | |
| | 2 = Green | |
| | 3 = Blue-Green | |

6. FLAG LEAF: (boot stage)

- | | | | |
|---|---|-----------------|-----------------|
| <table border="1"><tr><td>2</td></tr></table> | 2 | 1 = Erect | 2 = Recurved |
| 2 | | | |
| <table border="1"><tr><td>2</td></tr></table> | 2 | 1 = Not Twisted | 2 = Twisted |
| 2 | | | |
| <table border="1"><tr><td>2</td></tr></table> | 2 | 1 = Wax Absent | 2 = Wax Present |
| 2 | | | |

7. EAR EMERGENCE: (Days after June 1)

- | | | | | | |
|---|---------|------------------|-----------------------------|--------------------------|--|
| <table border="1"><tr><td>0</td><td>2</td><td>4</td></tr></table> | 0 | 2 | 4 | Number of Days (Average) | |
| 0 | 2 | 4 | | | |
| <table border="1"><tr><td> </td><td> </td></tr></table> | | | Number of Days Earlier Than | * _____ | |
| | | | | | |
| | Same As | * <u>Express</u> | | | |
| <table border="1"><tr><td> </td><td> </td></tr></table> | | | Number of Days Later Than | * _____ | |
| | | | | | |
- *Relative to a PVPO-Approved Commercial Variety Grown in the Same Trial

8. ANTHOR COLOR:

- | | | | |
|---|---|------------|------------|
| <table border="1"><tr><td>1</td></tr></table> | 1 | 1 = Yellow | 2 = Purple |
| 1 | | | |

9. PLANT HEIGHT: (from soil to top of head, excluding awns)

0 7 0

cm (Average)

0 4

cm Taller Than

Express

Same As

cm Shorter Than

#200800074

10. STEM:

A. ANTHOCYANIN

1

1 = Absent 2 = Present

B. WAXY BLOOM

2

1 = Absent 2 = Present

C. HAIRINESS (last internode of rachis)

2

1 = Absent 2 = Present

D. INTERNODE

1

1 = Hollow 2 = Semi-Solid 3 = Solid

3

Number of Nodes

E. PEDUNCLE

3

1 = Erect 2 = Recurved 3 = Semi-Erect

2

7 cm Length

F. AURICLE

1

Anthocyanin: 1 = Absent 2 = Present

2

Hair: 1 = Absent 2 = Present

11. HEAD: (At Maturity)

A. DENSITY

2

1 = Lax
2 = Middense (Laxidense)
3 = Dense

B. SHAPE

2

1 = Tapering
2 = Strap
3 = Clavate
4 = Other (Specify) _____

C. CURVATURE

2

1 = Erect
2 = Inclined
3 = Recurved

D. AWNEDNESS

4

1 = Awnless
2 = Apically Awnletted
3 = Awnletted
4 = Awned

12. GLUMES: (At Maturity)

A. COLOR

2

1 = White
2 = Tan
3 = Other (Specify) _____

B. SHOULDER

2

1 = Wanting 2 = Oblique
3 = Rounded 4 = Square
5 = Elevated 6 = Apiculate
7 = Other (Specify) _____

C. SHOULDER WIDTH

1

1 = Narrow
2 = Medium
3 = Wide

D. BEAK

3

1 = Obtuse
2 = Acute
3 = Acuminate

E. BEAK WIDTH

2

1 = Narrow
2 = Medium
3 = Wide

F. GLUME LENGTH

2

1 = Short (ca. 7 mm)
2 = Medium (ca. 8 mm)
3 = Long (ca. 9 mm)

G. WIDTH

2

1 = Narrow (ca. 3 mm)
2 = Medium (ca. 3.5 mm)
3 = Wide (ca. 4 mm)

H. PUBESCENCE

1

1 = Not Present
2 = Present

14

13. SEED:

A. SHAPE

- ☐ 1 = 1 = Ovate
2 = Oval
3 = Elliptical

B. CHEEK

- ☐ 1 = 1 = Rounded
2 = Angular

C. BRUSH

- ☐ 2 = 1 = Short
2 = Medium
3 = Long
- ☐ 1 = 1 = Not Collared
2 = Collared

D. CREASE

- ☐ 1 = 1 = Width 60% or less of Kernel
2 = Width 80% or less of Kernel
3 = Width Nearly as Wide as Kernel
- ☐ 1 = 1 = Depth 20% or less of Kernel
2 = Depth 35% or less of Kernel
3 = Depth 50% or less of Kernel

E. COLOR

- ☐ 3 = 1 = White
2 = Amber
3 = Red
4 = Other (Specify) _____

F. TEXTURE

- ☐ 1 = 1 = Hard
2 = Soft
3 = Other (Specify) _____

G. PHENOL REACTION (See Instructions)

- ☐ 4 = 1 = Ivory
2 = Fawn
3 = Light Brown
4 = Dark Brown
5 = Black

H. SEED WEIGHT

- ☐ 3 ☐ 2 = g/1000 Seed (whole number only)

I. GERM SIZE

- ☐ 2 = 1 = Small
2 = Midsize
3 = Large

14. DISEASE: PLEASE INDICATE THE SPECIFIC RACE OR STRAIN TESTED

(0 = Not Tested 1 = Susceptible 2 = Resistant 3 = Intermediate 4 = Tolerant)

- | | |
|---|---|
| <input type="checkbox"/> 2 Stem Rust (<i>Puccinia graminis</i> f. sp. <i>tritici</i>) | <input type="checkbox"/> 3 Leaf Rust (<i>Puccinia recondita</i> f. sp. <i>tritici</i>) |
| <input type="checkbox"/> 1 Stripe Rust (<i>Puccinia striiformis</i>) | <input type="checkbox"/> 0 Loose Smut (<i>Ustilago tritici</i>) |
| <input type="checkbox"/> 3 Tan Spot (<i>Pyrenophora tritici-repentis</i>) | <input type="checkbox"/> 0 Flag Smut (<i>Urocystis agropyri</i>) |
| <input type="checkbox"/> 0 Halo Spot (<i>Selenophoma donacis</i>) | <input type="checkbox"/> 0 Common Bunt (<i>Tilletia tritici</i> or <i>T. laevis</i>) |
| <input type="checkbox"/> 0 Septoria nodorum (Glume Blotch) | <input type="checkbox"/> 0 Dwarf Bunt (<i>Tilletia controversa</i>) |
| <input type="checkbox"/> 0 Septoria avenae (Speckled Leaf Disease) | <input type="checkbox"/> 0 Karnal Bunt (<i>Tilletia indica</i>) |
| <input type="checkbox"/> 3 Septoria tritici (Speckled Leaf Blotch) | <input type="checkbox"/> 0 Powdery Mildew (<i>Erysiphe graminis</i> f. sp. <i>tritici</i>) |
| <input type="checkbox"/> 1 Scab (<i>Fusarium</i> spp.) | <input type="checkbox"/> 0 "Snow Molds" |
| <input type="checkbox"/> 0 "Black Point" (Kernel Smudge) | <input type="checkbox"/> 0 Common Root Rot (<i>Fusarium</i> , <i>Cochliobolus</i> and <i>Bipolaris</i> spp.) |
| <input type="checkbox"/> 0 Barley Yellow Dwarf Virus (BYDV) | <input type="checkbox"/> 0 Rhizoctonia Root Rot (<i>Rhizoctonia solani</i>) |
| <input type="checkbox"/> 0 Soilborne Mosaic Virus (SBMV) | <input type="checkbox"/> 0 Black Chaff (<i>Xanthomonas campestris</i> pv. <i>translucens</i>) |
| <input type="checkbox"/> 0 Wheat Yellow (Spindle Streak) Mosaic Virus | <input type="checkbox"/> 0 Bacterial Leaf Blight (<i>Pseudomonas syringae</i> pv. <i>syringae</i>) |
| <input type="checkbox"/> 0 Wheat Streak Mosaic Virus (WSMV) | <input type="checkbox"/> Other (Specify) _____ |
| <input type="checkbox"/> Other (Specify) _____ | <input type="checkbox"/> Other (Specify) _____ |
| <input type="checkbox"/> Other (Specify) _____ | <input type="checkbox"/> Other (Specify) _____ |
| <input type="checkbox"/> Other (Specify) _____ | <input type="checkbox"/> Other (Specify) _____ |

15. INSECT: (0 = Not Tested 1 = Susceptible 2 = Resistant 3 = Intermediate 4 = Tolerant)

PLEASE SPECIFY BIOTYPE (where needed)

- | | |
|--|--|
| <input type="checkbox"/> 0 Hessian Fly (<i>Mayetiola destructor</i>) | <input type="checkbox"/> Other (Specify) _____ |
| <input type="checkbox"/> 0 Stem Sawfly (<i>Cephus</i> spp.) | <input type="checkbox"/> Other (Specify) _____ |
| <input type="checkbox"/> 0 Cereal Leaf Beetle (<i>Oulema melanopa</i>) | <input type="checkbox"/> Other (Specify) _____ |

15. INSECT: (continued) (0 = Not Tested 1 = Susceptible 2 = Resistant 3 = Intermediate 4 = Tolerant)

PLEASE SPECIFY BIOTYPE (Where Needed)

#200800074

☐ 0

Russian Aphid (*Diuraphis noxia*)

☐

Other (Specify) _____

☐ 0

Greenbug (*Schizaphis graminum*)

☐

Other (Specify) _____

☐ 0

Aphids

☐

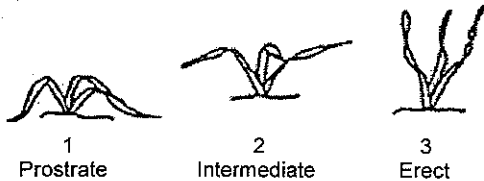
Other (Specify) _____

16. ADDITIONAL INFORMATION ON ANY ITEM ABOVE, OR GENERAL COMMENTS:

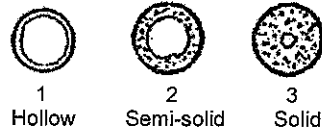
Section Numbers Correspond to the Numbers of the Sections on the Form

#200800074

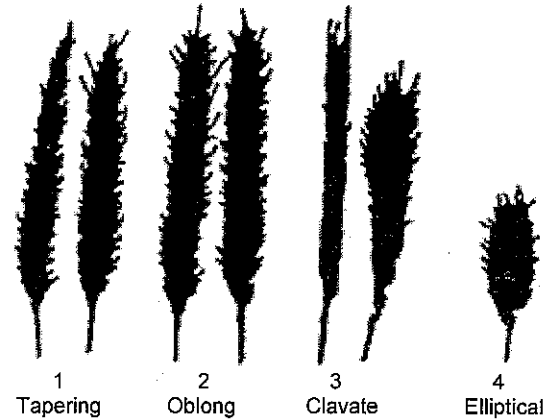
4. EARLY PLANT GROWTH HABIT:



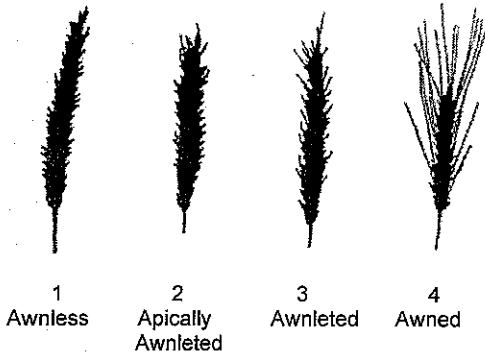
10. (D.) STEM INTERNODE X-SECTION:



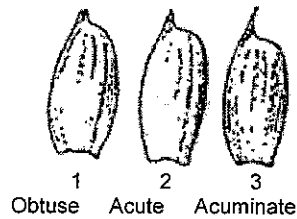
11. (B.) SPIKE SHAPE:



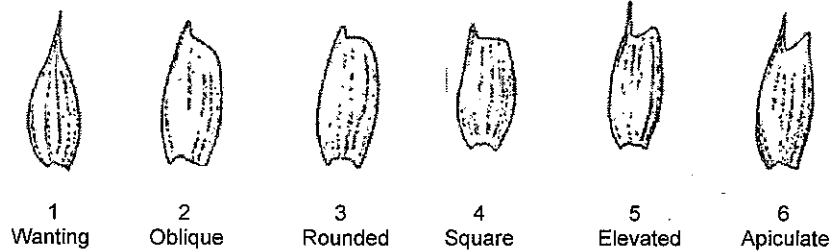
11. (D.) AWNEDNESS:



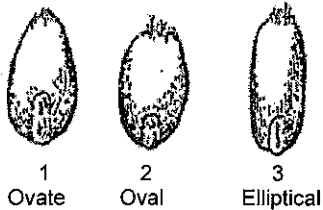
12. (D.) BEAK SHAPE:



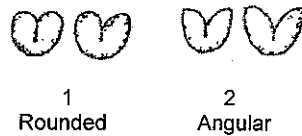
12. (C.) SHOULDER SHAPE:



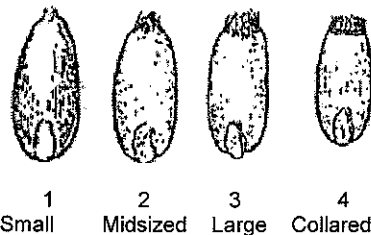
13. (A.) SEED SHAPE:



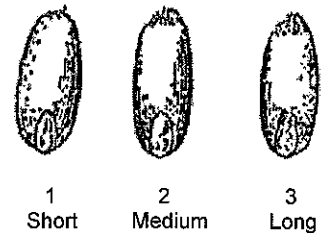
13. (B.) CHEEK SHAPE:



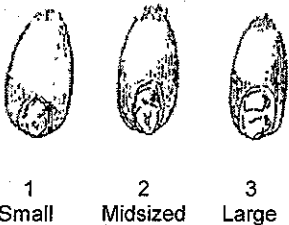
13. (C.) BRUSH SIZE



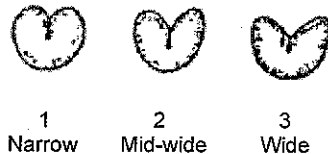
13. (C.) BRUSH HAIR LENGTH:



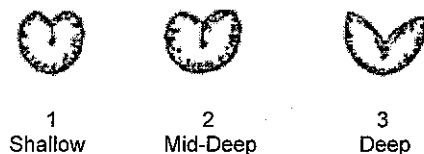
13. (I.) GERM (EMBRYO) SIZE:



13. (D.) SEED CREASE WIDTH:



13. (D.) SEED CREASE DEPTH:



U.S. DEPARTMENT OF AGRICULTURE
AGRICULTURAL MARKETING SERVICE

Application is required in order to determine if a plant variety protection certificate is to be issued (7 U.S.C. 2421). The information is held confidential until the certificate is issued (7 U.S.C. 2426).

EXHIBIT E
STATEMENT OF THE BASIS OF OWNERSHIP

| | | |
|--|--|--|
| 1. NAME OF APPLICANT(S) WestBred LLC | 2. TEMPORARY DESIGNATION OR EXPERIMENTAL NUMBER CA905-752 | 3. VARIETY NAME Samson |
| 4. ADDRESS (Street and No., or R.F.D. No., City, State, and ZIP, and Country) 81 Timberline Dr. Bozeman, MT 59718-8184 | 5. TELEPHONE (Include area code) (406) 587-1218 | 6. FAX (Include area code) (406) 586-8247 |
| | 7. PVPO NUMBER #200800074 | |

8. Does the applicant own all rights to the variety? Mark an "X" in the appropriate block. If no, please explain. ☒ YES ☐ NO9. Is the applicant (individual or company) a U.S. national or a U.S. based company? If no, give name of country. ☒ YES ☐ NO10. Is the applicant the original owner? ☒ YES ☐ NO If no, please answer one of the following:

a. If the original rights to variety were owned by individual(s), is (are) the original owner(s) a U.S. National(s)?

☐ YES ☐ NO If no, give name of country

b. If the original rights to variety were owned by a company(ies), is (are) the original owner(s) a U.S. based company?

☐ YES ☐ NO If no, give name of country

11. Additional explanation on ownership (Trace ownership from original breeder to current owner. Use the reverse for extra space if needed):

PLEASE NOTE:

Plant variety protection can only be afforded to the owners (not licensees) who meet the following criteria:

1. If the rights to the variety are owned by the original breeder, that person must be a U.S. national, national of a UPOV member country, or national of a country which affords similar protection to nationals of the U.S. for the same genus and species.
2. If the rights to the variety are owned by the company which employed the original breeder(s), the company must be U.S. based, owned by nationals of a UPOV member country, or owned by nationals of a country which affords similar protection to nationals of the U.S. for the same genus and species.
3. If the applicant is an owner who is not the original owner, both the original owner and the applicant must meet one of the above criteria.

The original breeder/owner may be the individual or company who directed the final breeding. See Section 41(a)(2) of the Plant Variety Protection Act for definitions.

According to the Paperwork Reduction Act of 1995, an agency may not conduct or sponsor, and a person is not required to respond to a collection of information unless it displays a valid OMB control number. The valid OMB control number for this information collection is 0581-0055. The time required to complete this information collection is estimated to average 0.1 hour per response, including the time for reviewing the instructions, searching existing data sources, gathering and maintaining the data needed, and completing and reviewing the collection of information.

The U.S. Department of Agriculture (USDA) prohibits discrimination in all its programs and activities on the basis of race, color, national origin, gender, religion, age, disability, sexual orientation, marital or family status, political beliefs, parental status, or protected genetic information. (Not all prohibited bases apply to all programs.) Persons with disabilities who require alternative means for communication of program information (Braille, large print, audiotape, etc.) should contact USDA's TARGET Center at 202-720-2600 (voice and TDD).

To file a complaint of discrimination, write USDA, Director, Office of Civil Rights, Room 326-W, Whitten Building, 14th and Independence Avenue, SW, Washington, D.C. 20250-9410 or call (202) 720-5964 (voice and TDD). USDA is an equal opportunity provider and employer.

According to the Paperwork Reduction Act of 1995, an agency may not conduct or sponsor, and a person is not required to respond to a collection of information unless it displays a valid OMB control number. The valid OMB control number for this information collection is 0581-0055. The time required to complete this information collection is estimated to average 5 minutes per response, including the time for reviewing instructions, searching existing data sources, gathering and maintaining the data needed, and completing and reviewing the collection of information.

The U.S. Department of Agriculture (USDA) prohibits discrimination in all its programs and activities on the basis of race, color, national origin, gender, religion, age, disability, sexual orientation, marital or family status, political beliefs, parental status, or protected genetic information. (Not all prohibited bases apply to all programs.) Persons with disabilities who require alternative means for communication of program information (Braille, large print, audiotape, etc.) should contact USDA's TARGET Center at 202-720-2600 (voice and TDD).

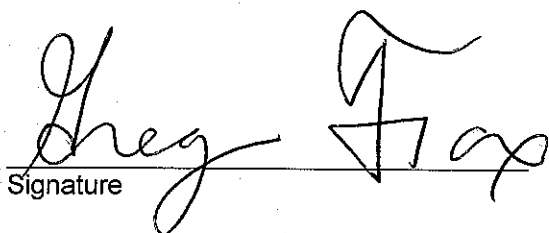
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U.S. DEPARTMENT OF AGRICULTURE
AGRICULTURAL MARKETING SERVICE
SCIENCE AND TECHNOLOGY
PLANT VARIETY PROTECTION OFFICE
BELTSVILLE, MD 20705

EXHIBIT F
DECLARATION REGARDING DEPOSIT

| | | |
|--|---|--|
| NAME OF OWNER (S) WestBred LLC | ADDRESS (Street and No. or RD No., City, State, and Zip Code and Country) 717 14th St. S. Fargo, ND 58103 | TEMPORARY OR EXPERIMENTAL DESIGNATION CA905-752 VARIETY NAME Samson |
| NAME OF OWNER REPRESENTATIVE (S) Dr. Greg Fox | ADDRESS (Street and No. or RD No., City, State, and Zip Code and Country) 717 14th St. S. Fargo, ND 58103 | FOR OFFICIAL USE ONLY PVPO NUMBER #200800074 |

I do hereby declare that during the life of the certificate a viable sample of propagating material of the subject variety will be deposited, and replenished as needed periodically, in a public repository in the United States in accordance with the regulations established by the Plant Variety Protection Office.


Signature

May 30, 2007

Date